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ABSTRACT

This paper describes an experiment in which the Developmental Sentence Scoring procedure, which has been used successfully for scoring sentence complexity in child language, was examined for its usefulness when applied to adult learners of English as a Second Language. The technique is based upon a developmental scale of syntax acquisition within eight grammatical categories. Spontaneous speech samples were collected from 20 subjects enrolled in the Center for English as a Second Language course, randomly selected from various levels of proficiency. The procedure was then simplified by eliminating the eight grammatical categories. These two procedures were compared, and it was found that both versions provide adequate, objective measures of grammatical complexity. The simplified system, being less time-consuming, is probably more useful for the classroom teacher. It was also found that certain structures do not appear frequently in the type of interview situation used in this study to elicit speech samples, indicating that some other procedure should be used to elicit those structures for measurement. (Author/AM)

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Measuring Sentence Complexity in Spontaneous Speech

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Introduction

One of the problems which the ESL teacher has to deal with is the evaluation of the oral productive ability of the students. There are standardized tests as well as conventional testing formats (such as multiple choice, sentence completion, etc.) to assess the students' proficiency in the areas of Reading, Vocabulary, or Grammatical Structure; but it is not uncommon to find students who perform well on these structured (usually written) tests, but who, nevertheless, lack proficiency in their ability to use the language in less structured situations. It frequently happens, for example, that students avoid features of the language with which they do not feel confident (Schachter 1974). Assessing the student's ability to use the language that he learns in the classroom in spontaneous, conversational situations, then, becomes a special problem in the evaluation process.

In this paper, an objective method for scoring the sentence complexity of spontaneous speech which has been used sucessfully in child language development will be examined for its usefulness when applied to spontaneous speech data obtained from adult learners of English as a Second Language. Then, some suggestions will be made for simplifying the scoring procedure in order to make it more adaptable for use by the classroom teacher.

Developmental Sentence Scoring

Laura Lee and Susan Canter (1971) have developed a procedure for measuring the grammatical complexity of tape-recorded speech samples obtained from children. They argue that traditional testing techniques, which are based on highly selected items usually presented in single-sentence tasks, are of limited usefulness in predicting performance in spontaneous speech, which places an additional grammatical load upon the speaker. Developmental Sentence Scoring, as their procedure is called, allows the researcher to estimate to what extent the child has generalized the grammatical rules of the language sufficiently to use them in verbal performance.

The technique is based upon a developmental scale of syntax acquisition, showing the general order in which normal children acquire particular grammatical structures. By a careful review of studies of child language acquisition, the authors were able to determine the order of appearance of specific structures within the following eight grammatical categories:

Indefinite Pronouns and Noun Modifiers
Personal Pronouns
Main Verbs
Secondary Verbs
Negatives
Conjunctions
Interrogative Reversals
WH- questions

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Within each category, specific words or structures are grouped according to what is believed to be a general developmental progression. This allows weighted scores to be assigned to the more complex, later-developing forms. The highest scores in each category range between five and eight.

The article by Lee and Canter (1971) provides a complete list of structures and their scores within each category (pp. 338-340). Two of the categories, Personal Pronouns and Conjunctions, are presented in Figure 1 in order to illustrate the scoring procedure.

Personal Pronouns	Conjunctions
1. 1st and 2nd person: I, me, my, mine, you, your(s)	1. and
2. Third person: he, him, his, she, her, her(s)	2. but
3. Plural pronouns: we, us, our(s), they, them, their	3. because
4. those, these	4. so, and so, if, so that
5. Reflexive pronouns: myself, yourself, himself, herself, itself, themselves	5. or, except, only
6. Wh-pronouns: who, which, whose, whom, that, what, how many, how much: I know <u>who</u> came. That's <u>what</u> I said. Wh-word + infinitive: I know <u>what</u> to do.	6. where, when, while, why, how, whether (or not), for, till, until, since, before, after, unless, as, as+adjective+as, as if, like, that, than: I know <u>where</u> you are. I see <u>why</u> you want it. Don't come <u>till</u> I call.
7. (his) own, one, oneself, whichever, whoever, whatever: Each has <u>his own</u>. Take <u>whatever</u> you like.	

Figure 1.

from L. Lee and S. Canter (1971), "Developmental Sentence Scoring: A Clinical Procedure for Estimating Syntactic Development in Children's Spontaneous Speech," Journal of Speech and Hearing Disorders, v. 36, no.3, pp. 315-340.

The earliest pronouns to appear, according to the authors, are based on the speaker-listener distinction. Therefore, first and second person pronouns receive a score of 1. Third person pronouns are the next to appear and receive a score of 2. These are followed

by plural pronouns, which receive a score of 3, etc. Similarly, the conjunctions are scored according to their presumed developmental order of appearance.

Once the speech samples are collected, the actual scoring procedure consists in assigning the weighted score for a structure each time it is used correctly. No score (or a zero) is assigned for a structure used incorrectly. The total points for each sentence are then added together and divided by the number of sentences spoken. This number, which represents the individual's mean score per sentence, is called the Developmental Sentence Score (DSS), and has sucessfully provided researchers in child language development with a quantative measure of grammatical development. For example, it has provided speech clinicians with a normative index against which to measure the speech complexity of children enrolled for clinical training.

Applying the DSS to Adult Learners of ESL

In order to examine the adequacy of the Developmental Sentence Scoring procedure for use with adult learners of ESL, spontaneous speech samples were collected from twenty subjects enrolled in the Center for English as a Second Language at Southern Illinois University. The subjects, who were randomly selected from various levels of proficiency, were simply asked to talk about themselves, their families, interests, etc. Each interview was tape-recorded, and ranged from ten to twenty sentences in length. The tapes were transcribed, and a Developmental Sentence Score (DSS) was computed for each subject.

In order to determine the adequacy of this scoring procedure, some other measure of proficiency was needed with which to compare it. This was obtained by ranking the subjects (from one to twenty) according to their overall verbal performance in the interview situation. This ranking was done prior to the Developmental Sentence Scoring so that the observer would not be influenced by the subjects' scores. Finally, the subjects were ranked according to their Developmental Sentence Scores, and a correlation coefficient computed. In this case, the rank order correlation between the two measures was .85, suggesting that the Developmental Sentence Scoring technique is, in fact, a valid index of the grammatical complexity of the spontaneous speech of these adult subjects.

Simplifying the Scoring Procedure

In applying the Developmental Sentence Scoring technique to this particular sample of data, it was felt that, although the procedure appeared to provide a reliable estimate of the subjects' verbal performance, it was also quite time-consuming. Each structure must be located within one of the eight categories, and a weighted score assigned. Therefore, an attempt was made to simplify the scoring procedure without losing any accuracy of measurement.

The second scoring procedure applied to the data made use of the same grammatical categories defined in the Lee and Canter

(1971) study. This time, however, the system of assigning weighted scores for specific structures within each category was abandoned. Instead, the subject received a point each time one of the structures was used correctly, and a half-point each time it was used incorrectly. For example, each time a conjunction was used correctly, the subject received one point (no matter which conjunction was used) - if used incorrectly, he received a half-point. In this procedure, also, the total points for each sentence were added together and divided by the number of sentences spoken, providing a mean complexity score for each subject. In order to determine the adequacy of this scoring procedure, the subjects were again ranked according to thier mean scores, and this ranking compared to the same ranking provided by observation in the interview situation. The rank order correlation between this simplified scoring procedure and the Developmental Sentence Scoring was also .84, suggesting that the simplification of the scoring technique resulted in no loss in accuracy of measurement.

Diagnosing Difficulties

The comparison between the Developmental Sentence Scoring and the simplified scoring technique presented in the previous section is based on the overall mean scores provided by each procedure. Developmental Sentence Scoring, however, was not intended to provide only an overall index of grammatical complexity, but was intended to serve diagnostic purposes as well. Using the same developmental scale of weighted scores, it is possible to determine an individual's mean score in each of the eight grammatical categories. It is, therefore, possible to identify areas of difficulty in the subject's use of these structures. With this information, the teacher can plan lessons to provide additional, or remedial, work on those structures for which the student's verbal performance is weak. In order to determine whether the simplified scoring system could provide the same diagnostic information as the Developmental Sentence Scoring, the subjects' mean scores in each category were calculated using both scoring systems and correlation coefficients computed. These correlations are presented in Figure 2 (Since very few questions appeared in the data, only six of the categories are compared).

Category	Correlation
Indefinite Pronouns (and Noun Modifiers)	.57
Personal Pronouns	.51
Main Verbs	.90
Secondary Verbs	.92
Negatives	.96
Conjunctions	.94
Overall Mean Scores	.95

Figure 2.
Correlations between the two scoring systems for each category.

Correlations between the two scoring systems for the categories of Indefinite Pronouns and Personal Pronouns are moderate (.57 and .51), while the correlations for the categories of Main Verb, Secondary Verb, Negative, and Conjunction are quite high (ranging from .90 to .96). The overall correlation between the mean score using the simplified system and the Developmental Sentence Score is also quite high at .95.

Conclusion

It appears, then, that the two scoring systems examined in this study provide adequate, objective measures of grammatical complexity in the spontaneous speech of ESL students, and may be useful to the teacher in evaluating the overall verbal performance of students as well as in diagnosing areas of difficulty. It was found that both scoring systems yielded comparable results, suggesting that the simplified scoring procedure, being less time-consuming, would be more practical for use by the classroom teacher. Finally, it was found that certain structures, such as questions, do not appear frequently in the type of interview situation used in this study to elicit speech samples, indicating that some other procedure should be used to elicit those structures for measurement.